

Table 1

Parameter	Value
α_1	0.1
α_2	0.2
α_3	0.3
α_4	0.4
α_5	0.5
α_6	0.6
α_7	0.7
α_8	0.8
α_9	0.9
α_{10}	1.0

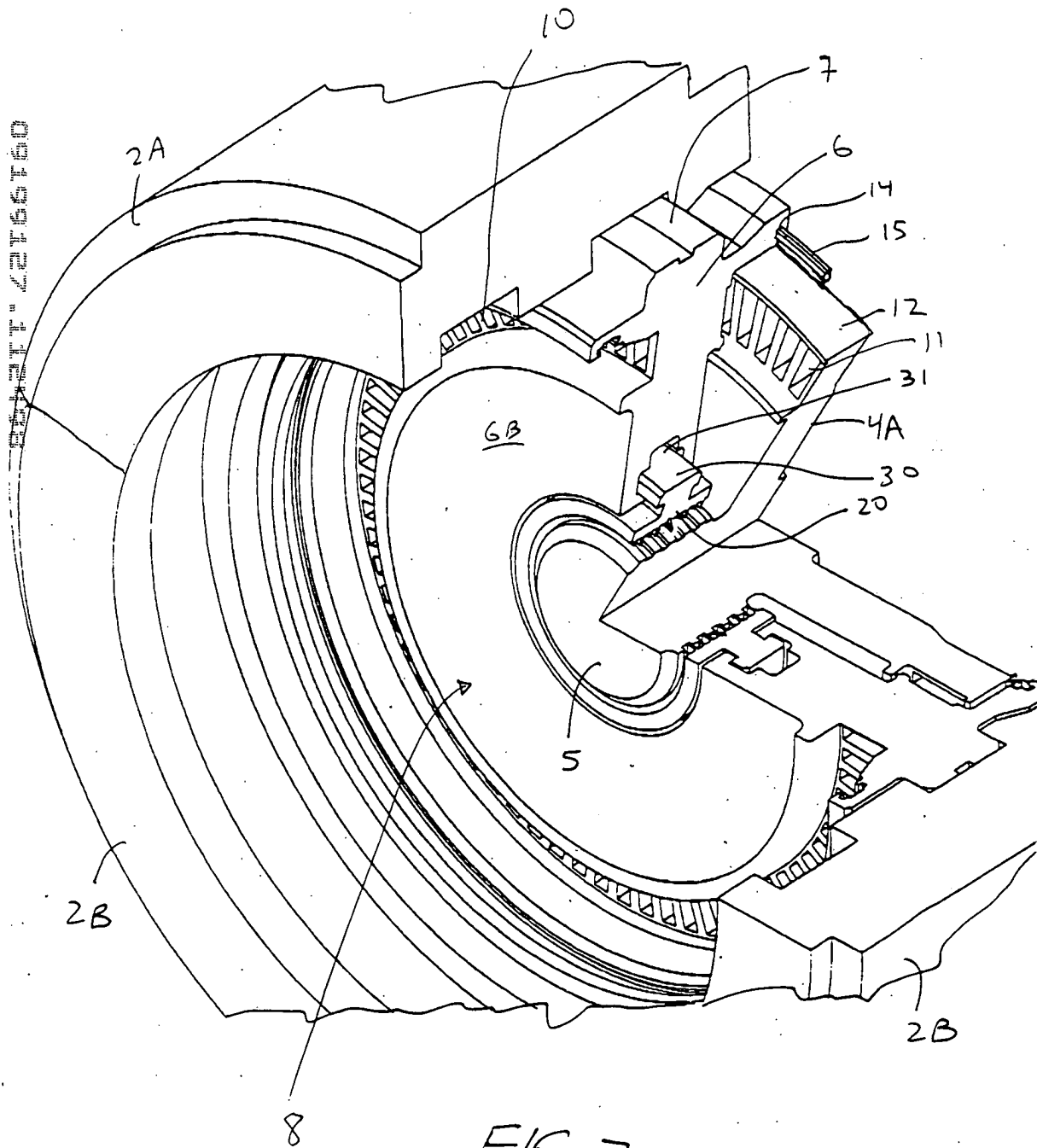


FIG. 2

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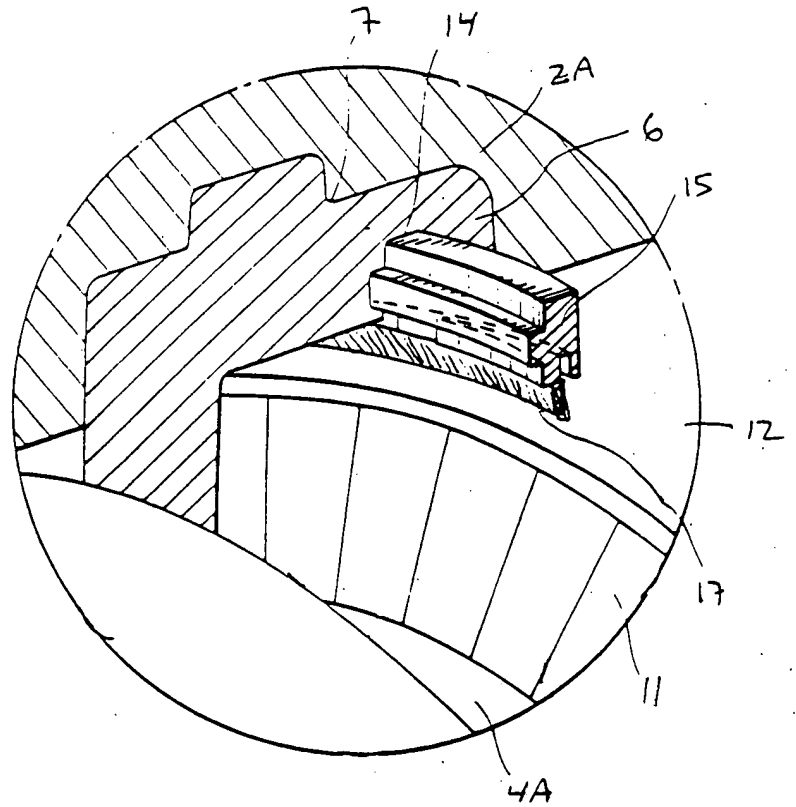


FIG. 2A

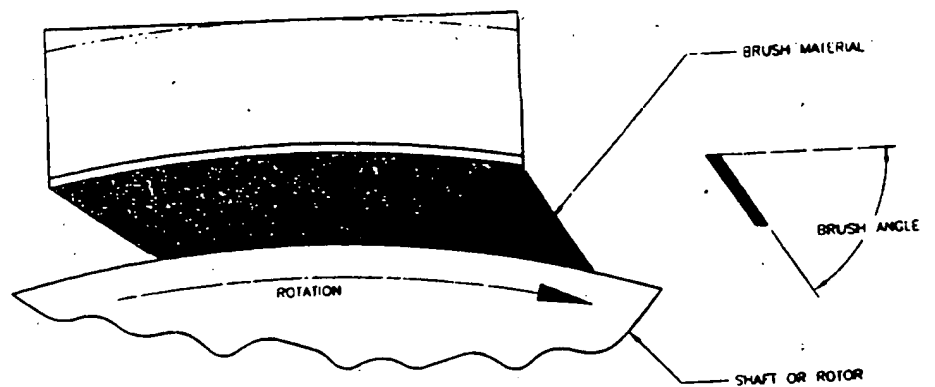
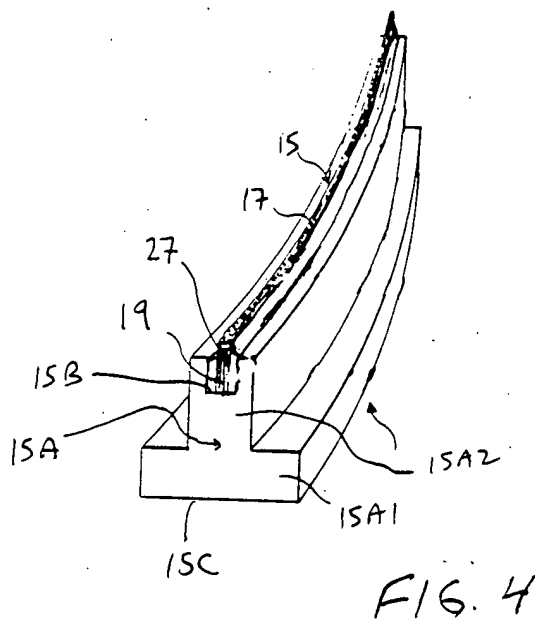
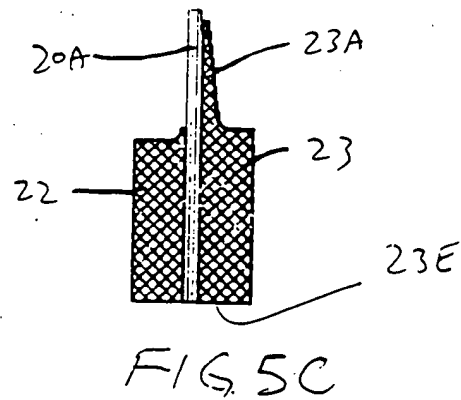
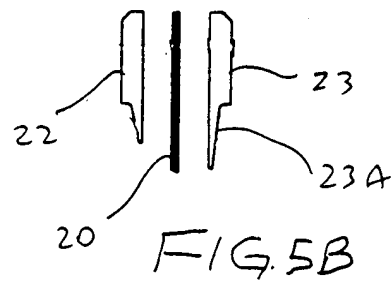
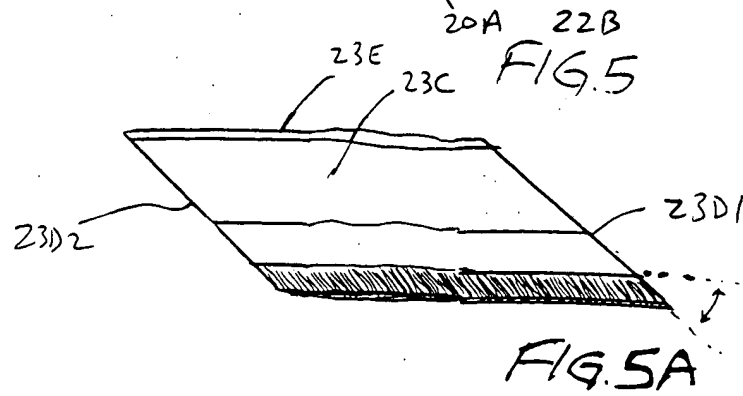
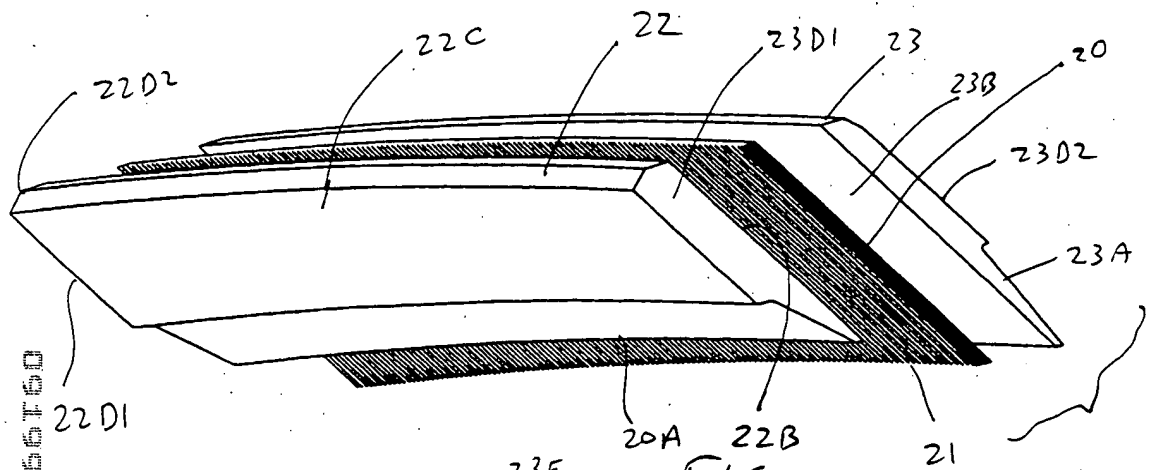


FIG. 2B

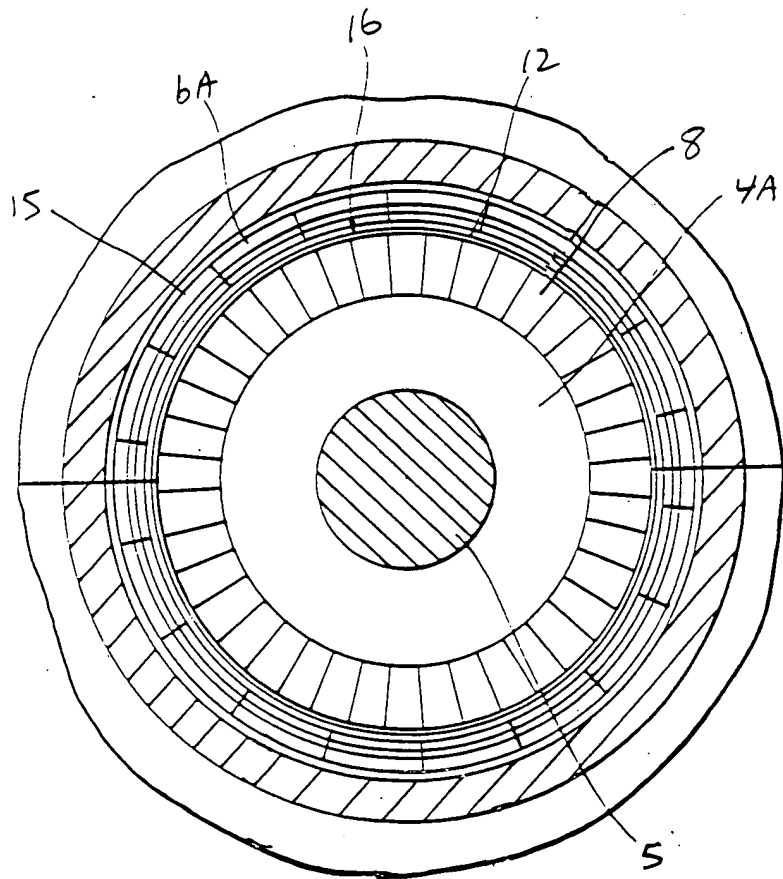
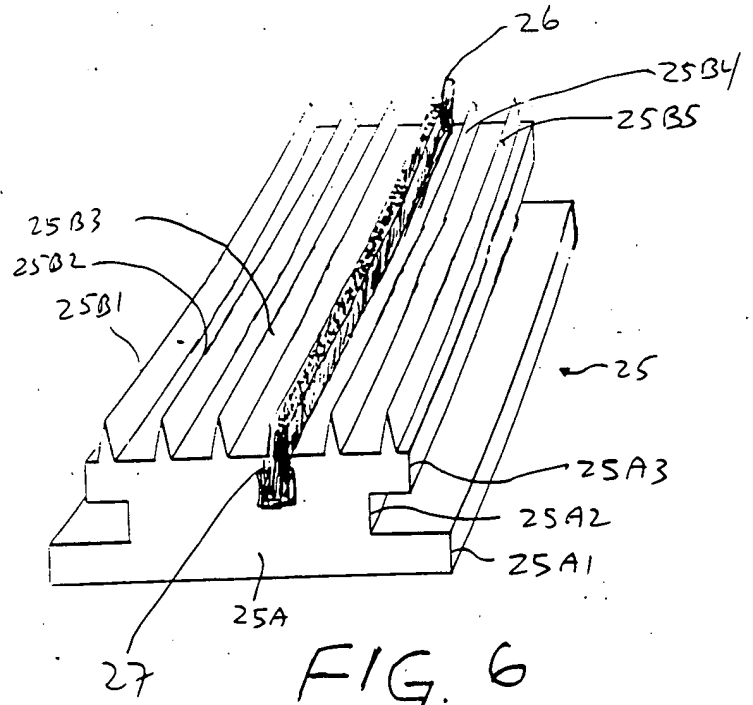
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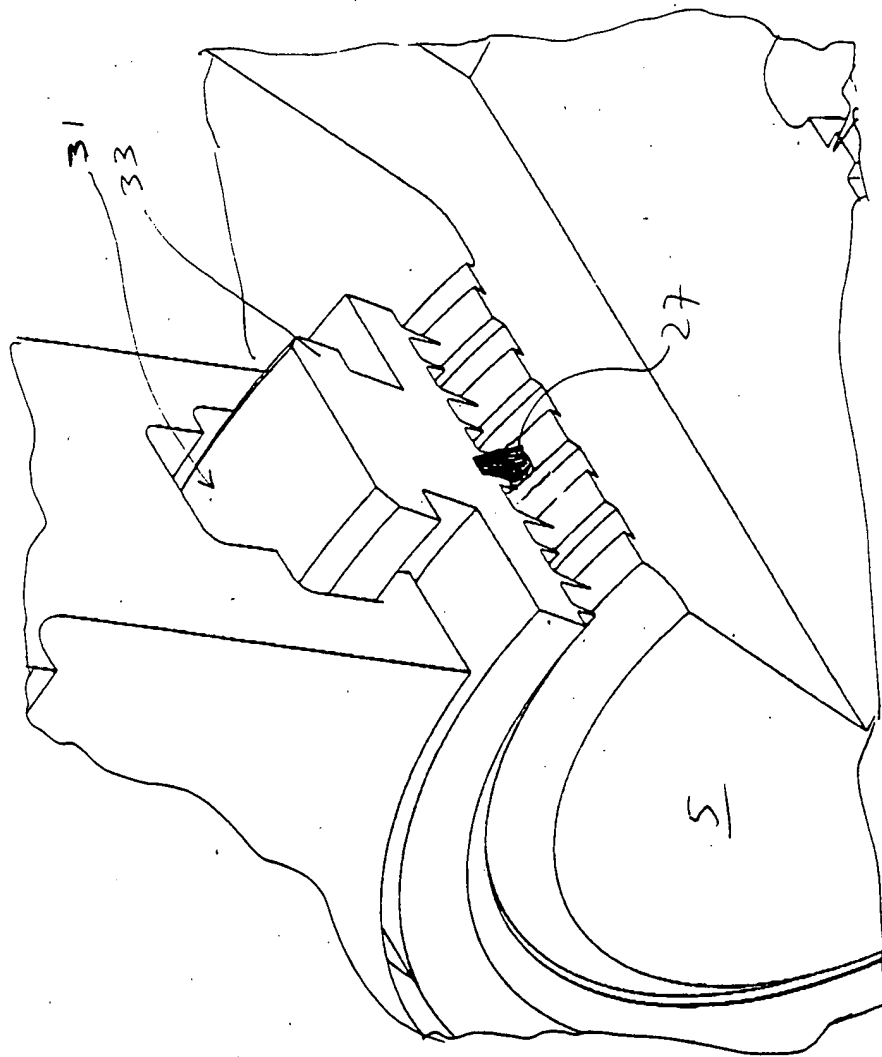
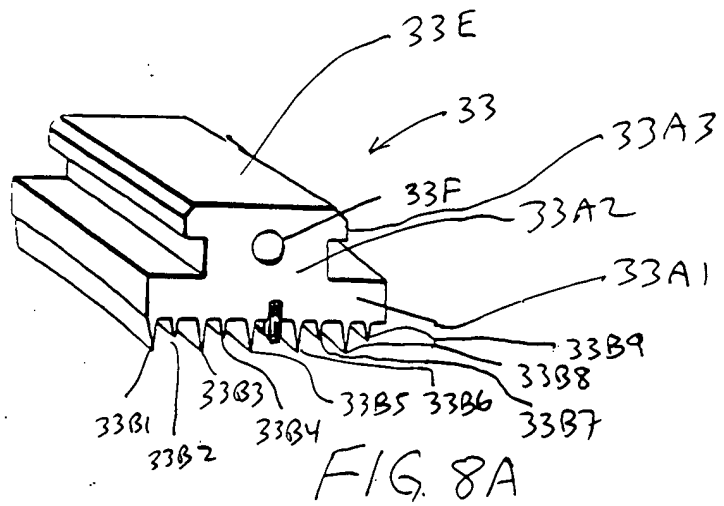


FIG. 8

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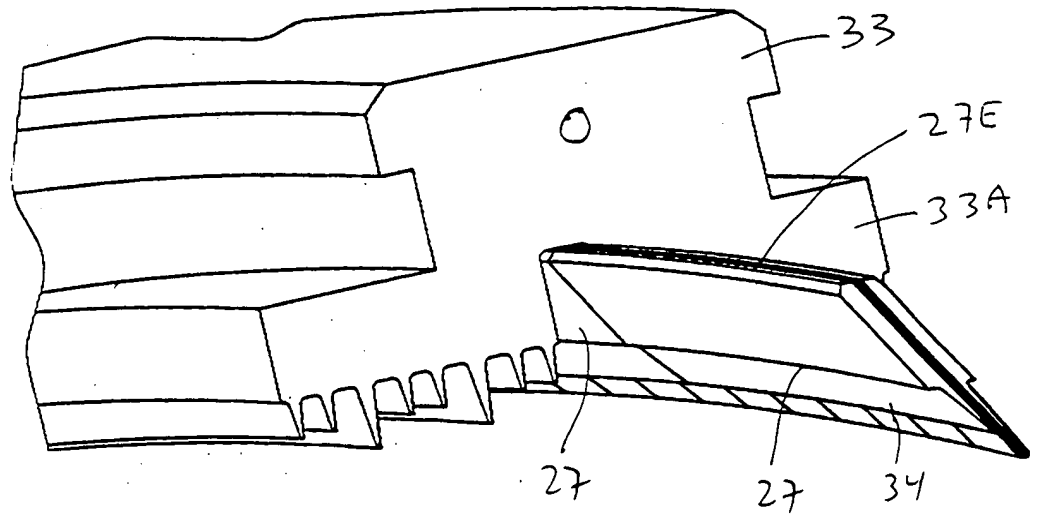


FIG. 8B

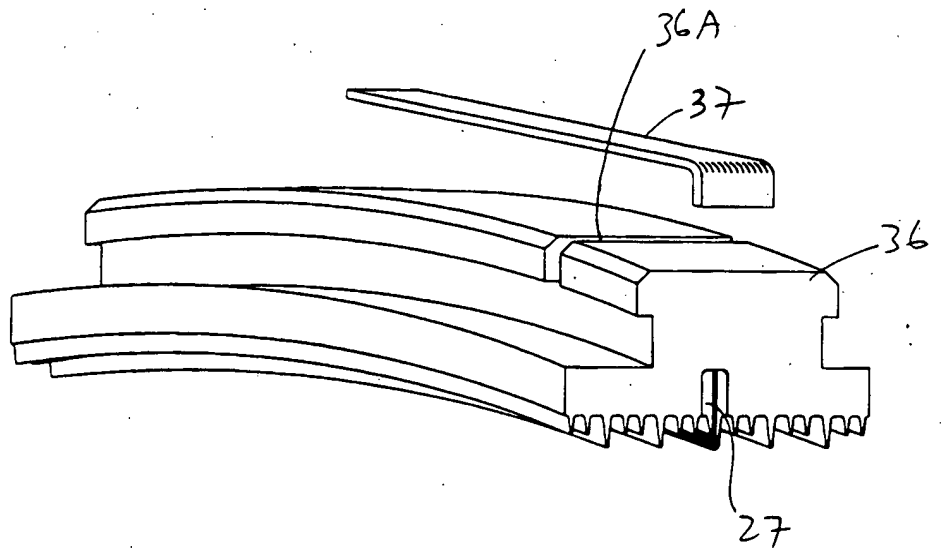


FIG. 8C

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09150127.412198

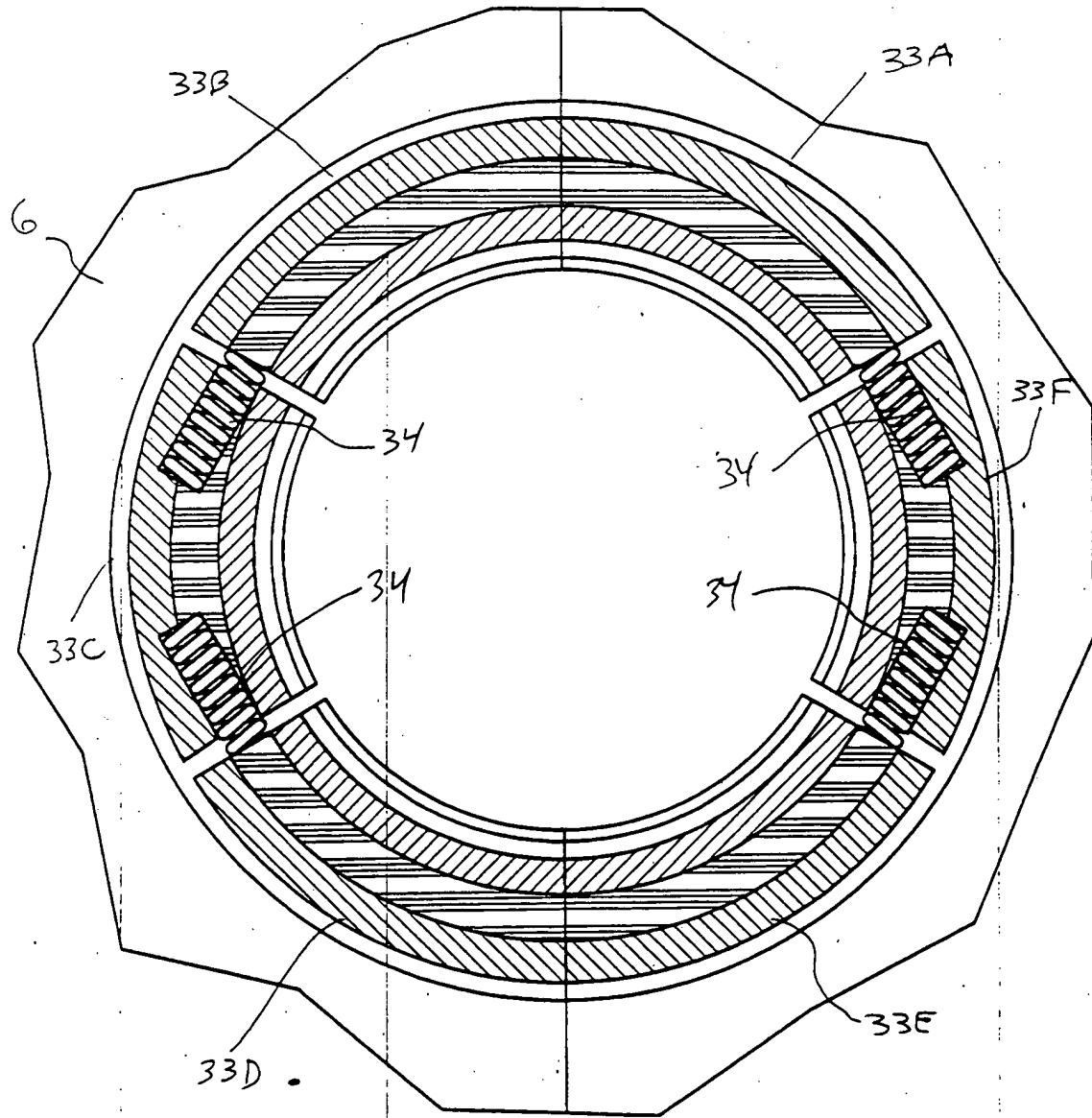


FIG. 9

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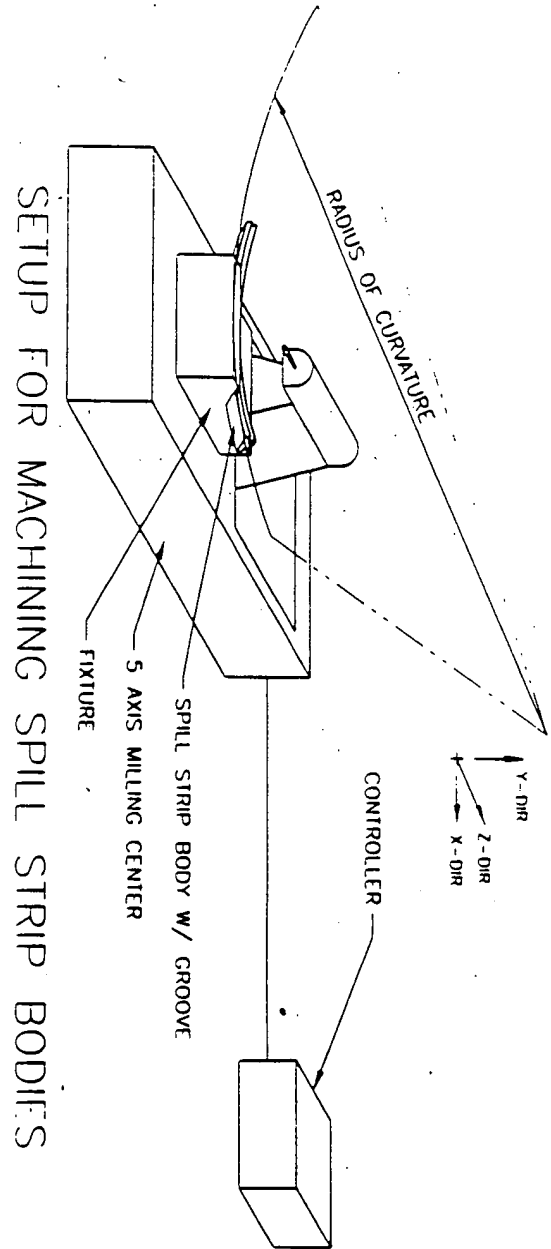
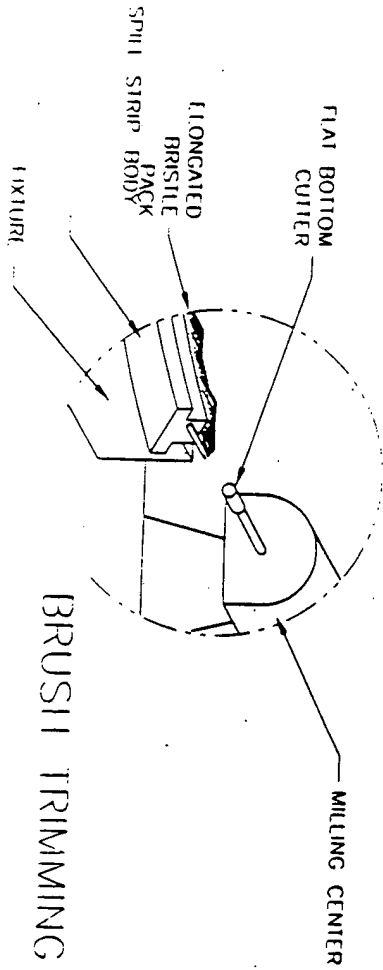


FIG 9A



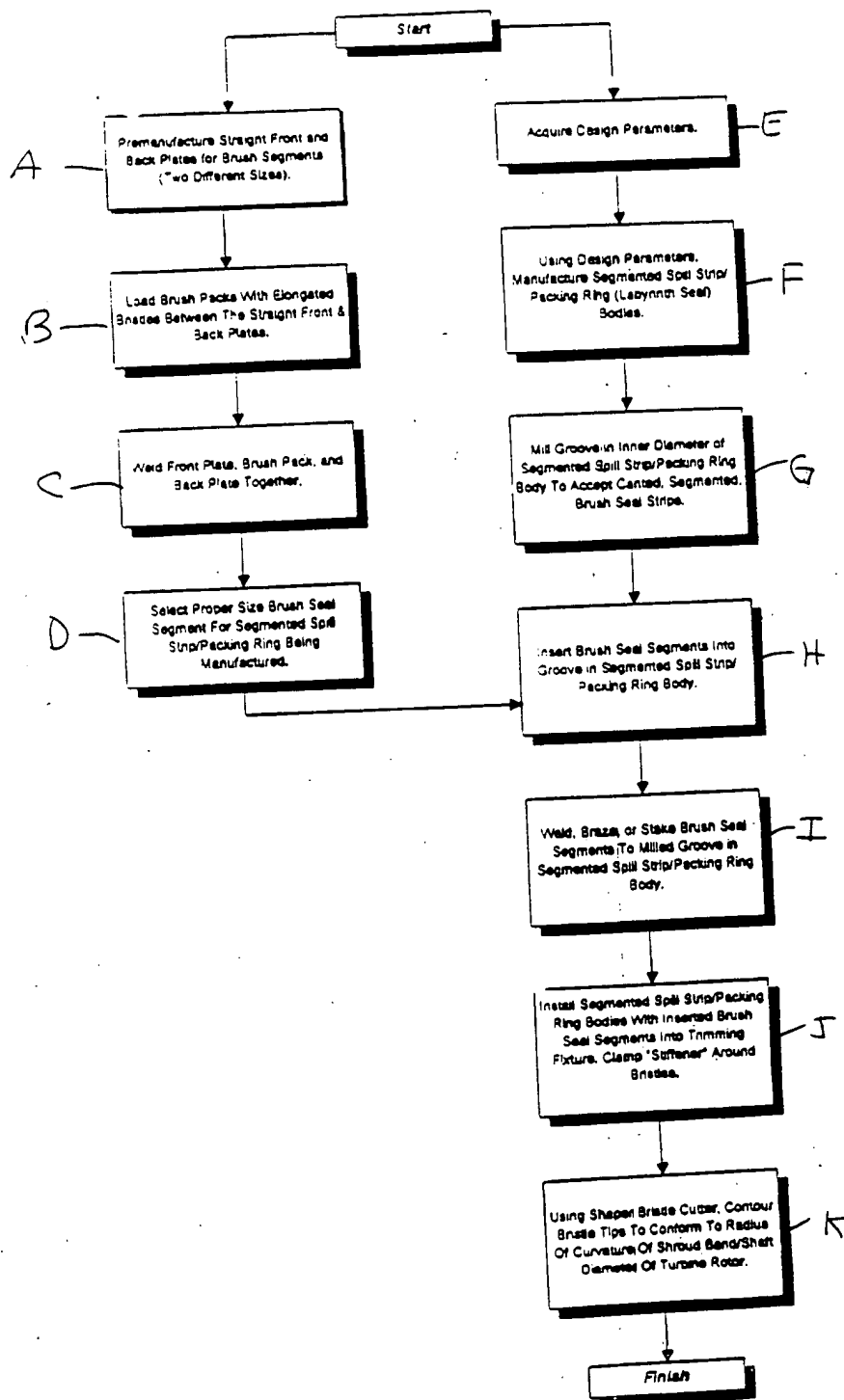
BRUSH TRIMMING OPERATION

FIG 9B

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Manufacturing Flowchart



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FIG 10

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Segmented Brush Seal Drop Study

Based On Curved Segments

>>>

Radius of Curvature for Segment

15 530

Segment Length (in inches)												
	1/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	
10	0.0006	0.0011	0.0025	0.0044	0.0069	0.0100	0.0178	0.0279	0.0404	0.0552	0.0725	
21	0.0005	0.0010	0.0022	0.0038	0.0060	0.0087	0.0154	0.0242	0.0349	0.0478	0.0627	
22	0.0005	0.0008	0.0019	0.0033	0.0052	0.0074	0.0133	0.0208	0.0300	0.0410	0.0538	
23	0.0004	0.0007	0.0016	0.0028	0.0044	0.0063	0.0113	0.0177	0.0255	0.0348	0.0457	
24	0.0003	0.0006	0.0013	0.0024	0.0037	0.0053	0.0094	0.0148	0.0214	0.0292	0.0383	
25	0.0003	0.0006	0.0011	0.0019	0.0030	0.0044	0.0078	0.0122	0.0178	0.0240	0.0315	
26	0.0002	0.0004	0.0009	0.0016	0.0024	0.0035	0.0062	0.0098	0.0141	0.0192	0.0252	
27	0.0002	0.0003	0.0007	0.0012	0.0019	0.0027	0.0048	0.0075	0.0108	0.0148	0.0194	
28	0.0001	0.0002	0.0005	0.0009	0.0014	0.0019	0.0035	0.0054	0.0078	0.0107	0.0140	
29	0.0001	0.0001	0.0003	0.0006	0.0009	0.0013	0.0022	0.0035	0.0050	0.0069	0.0090	
30	0.0000	0.0001	0.0002	0.0003	0.0004	0.0006	0.0011	0.0017	0.0024	0.0033	0.0044	
31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
32	0.0000	0.0001	0.0001	0.0003	0.0004	0.0006	0.0010	0.0016	0.0023	0.0031	0.0041	
33	0.0001	0.0001	0.0003	0.0005	0.0008	0.0011	0.0020	0.0031	0.0044	0.0060	0.0079	
34	0.0001	0.0002	0.0004	0.0007	0.0011	0.0016	0.0029	0.0045	0.0064	0.0088	0.0115	
35	0.0001	0.0002	0.0005	0.0009	0.0014	0.0021	0.0037	0.0058	0.0083	0.0114	0.0149	

Packing Ring Slot Diameter (in and lines)

Drop (Δ Radius of Curvature) (in inches)

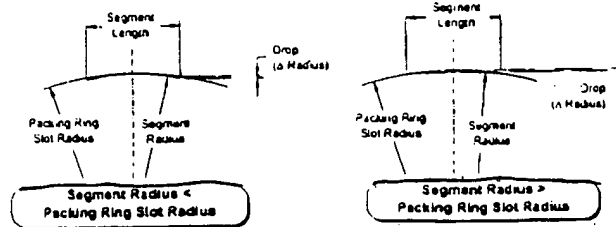
Drop (Δ Radius of Curvature) (in inches)

FIG. 11A

Segmented Brush Seal Drop Study

Based On Curved Segments

>>>

Radius of Curvature for Segment

11 500

Segment Length (in inches)											
	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
20	0.0002	0.0004	0.0009	0.0016	0.0026	0.0037	0.0066	0.0103	0.0149	0.0204	0.0268
21	0.0001	0.0003	0.0006	0.0010	0.0016	0.0023	0.0042	0.0065	0.0094	0.0129	0.0170
22	0.0001	0.0001	0.0003	0.0005	0.0008	0.0011	0.0020	0.0031	0.0045	0.0062	0.0081
23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	0.0001	0.0001	0.0003	0.0005	0.0007	0.0010	0.0018	0.0029	0.0041	0.0058	0.0074
25	0.0001	0.0002	0.0005	0.0009	0.0014	0.0020	0.0035	0.0055	0.0079	0.0108	0.0142
26	0.0002	0.0003	0.0007	0.0013	0.0020	0.0028	0.0050	0.0079	0.0114	0.0158	0.0205
27	0.0002	0.0004	0.0009	0.0016	0.0025	0.0036	0.0065	0.0101	0.0147	0.0200	0.0263
28	0.0003	0.0006	0.0011	0.0019	0.0030	0.0044	0.0078	0.0122	0.0177	0.0241	0.0317
29	0.0003	0.0006	0.0013	0.0023	0.0036	0.0051	0.0090	0.0142	0.0205	0.0279	0.0367
30	0.0004	0.0006	0.0014	0.0025	0.0040	0.0057	0.0102	0.0160	0.0231	0.0315	0.0413
31	0.0004	0.0007	0.0016	0.0028	0.0044	0.0063	0.0113	0.0177	0.0255	0.0348	0.0457
32	0.0004	0.0008	0.0017	0.0031	0.0048	0.0069	0.0123	0.0192	0.0278	0.0379	0.0498
33	0.0005	0.0008	0.0019	0.0033	0.0052	0.0074	0.0132	0.0207	0.0299	0.0409	0.0536
34	0.0005	0.0009	0.0020	0.0036	0.0058	0.0078	0.0140	0.0221	0.0319	0.0436	0.0572
35	0.0005	0.0009	0.0021	0.0037	0.0058	0.0084	0.0150	0.0234	0.0338	0.0462	0.0606

Packing Ring Slot Diameter (in inches)

Drop (3: Radius of Curvature) (in inches)

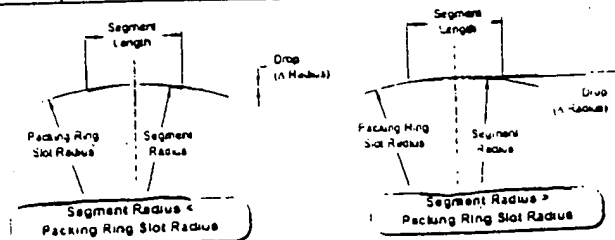
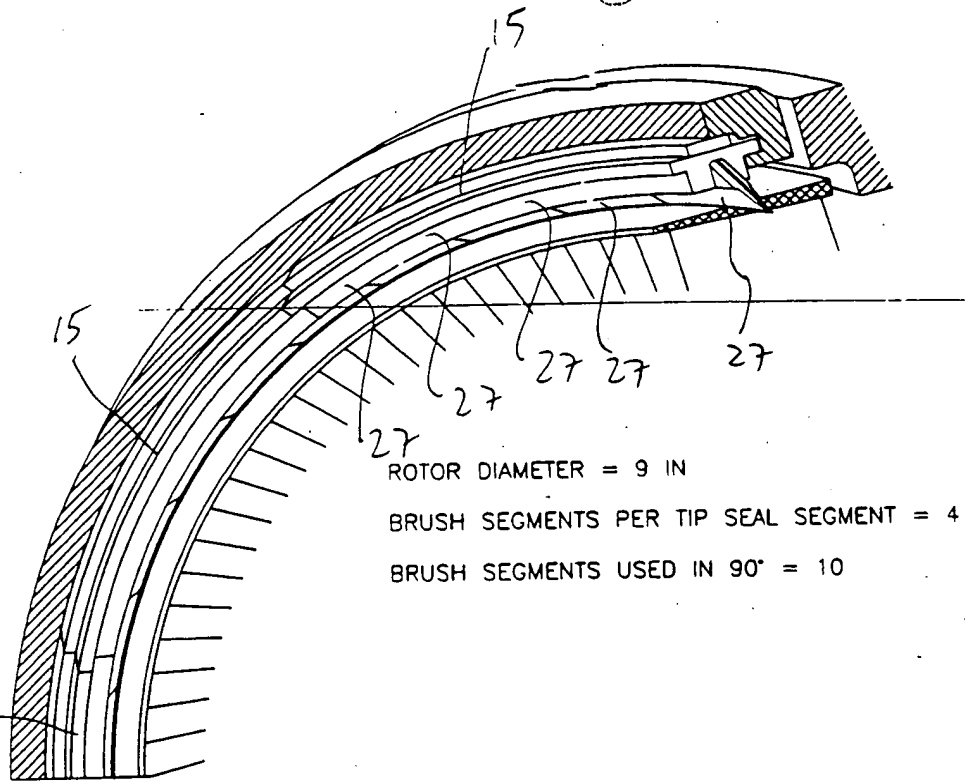
Drop (Δ Radius of Curvature) (in inches)

FIG. 11B

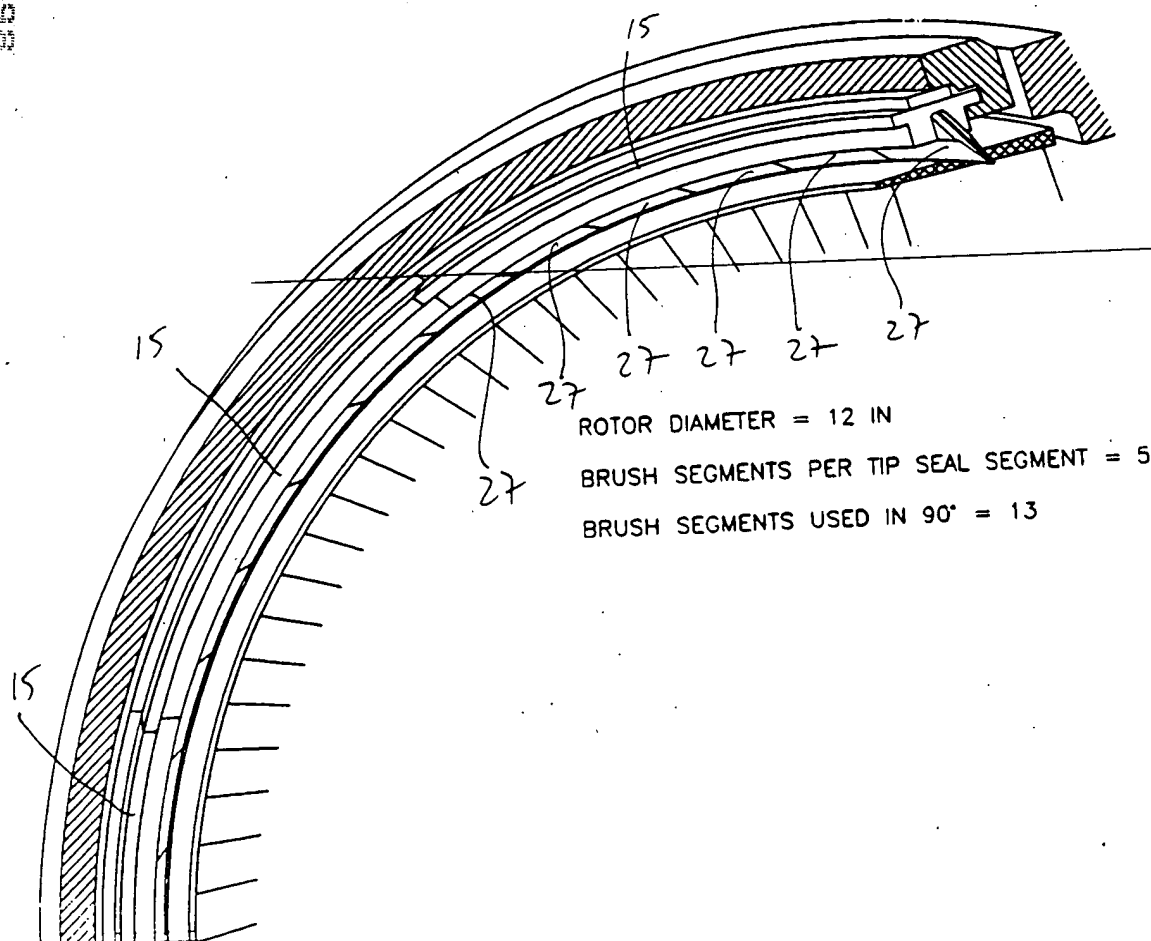
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ROTOR DIAMETER = 9 IN
BRUSH SEGMENTS PER TIP SEAL SEGMENT = 4
BRUSH SEGMENTS USED IN 90° = 10

FIG. 12A



ROTOR DIAMETER = 12 IN
BRUSH SEGMENTS PER TIP SEAL SEGMENT = 5
BRUSH SEGMENTS USED IN 90° = 13

FIG. 12B

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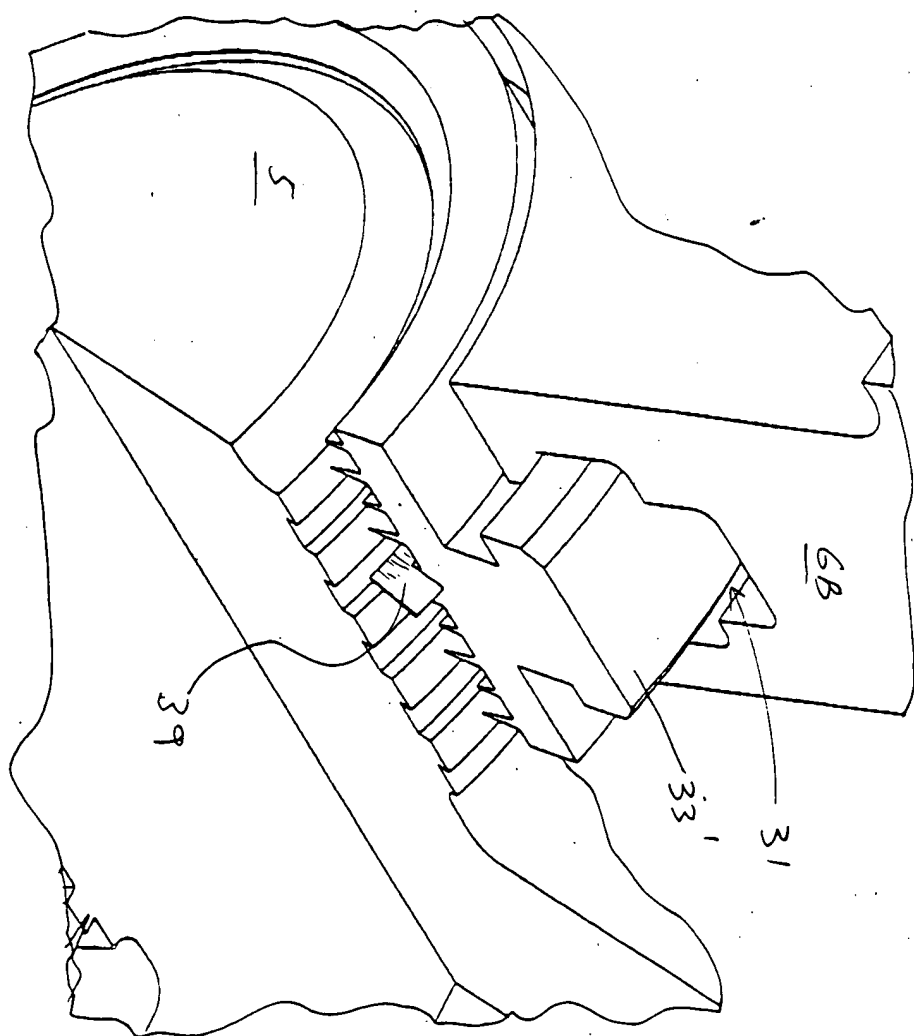


FIG. 13

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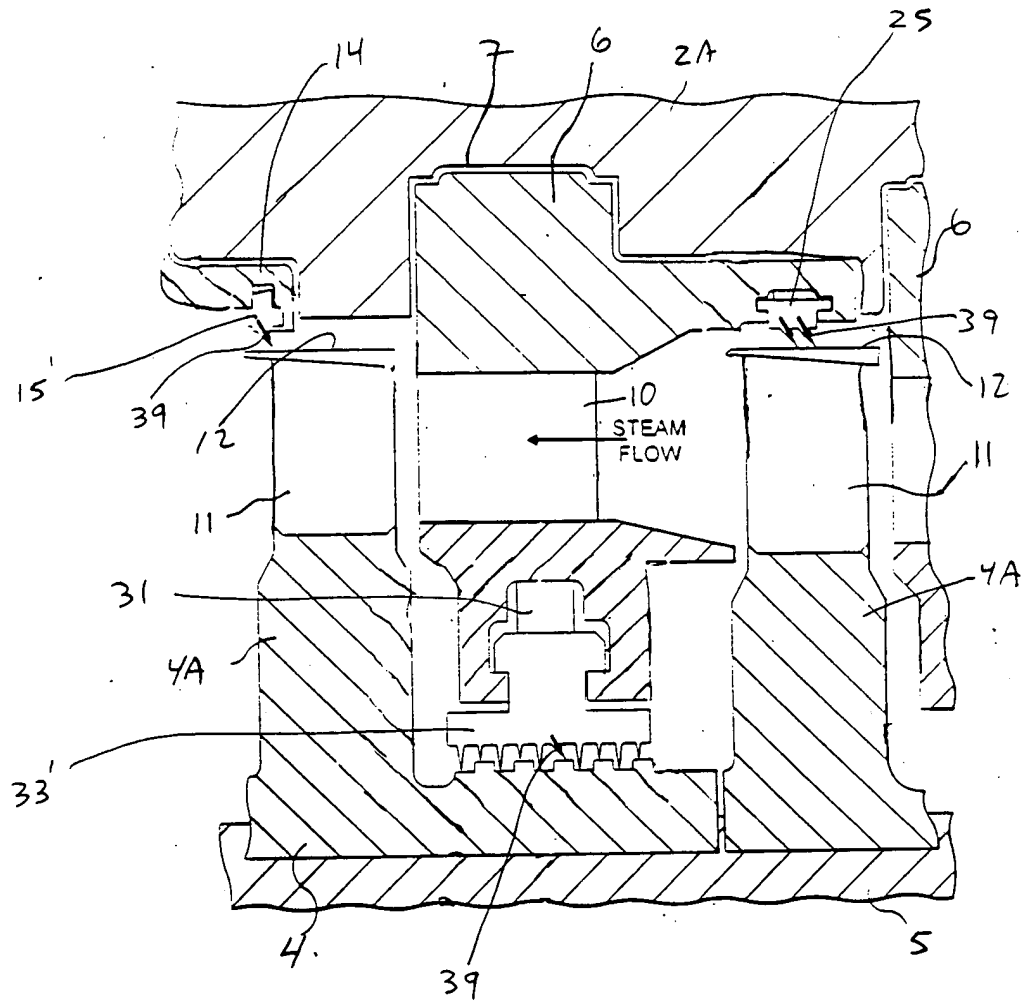


FIG. 14

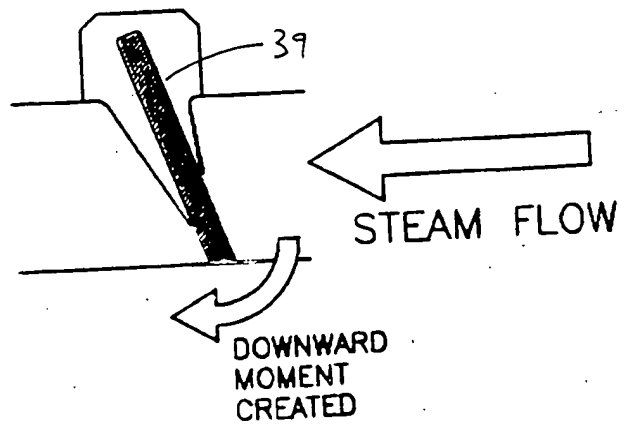


FIG. 14A

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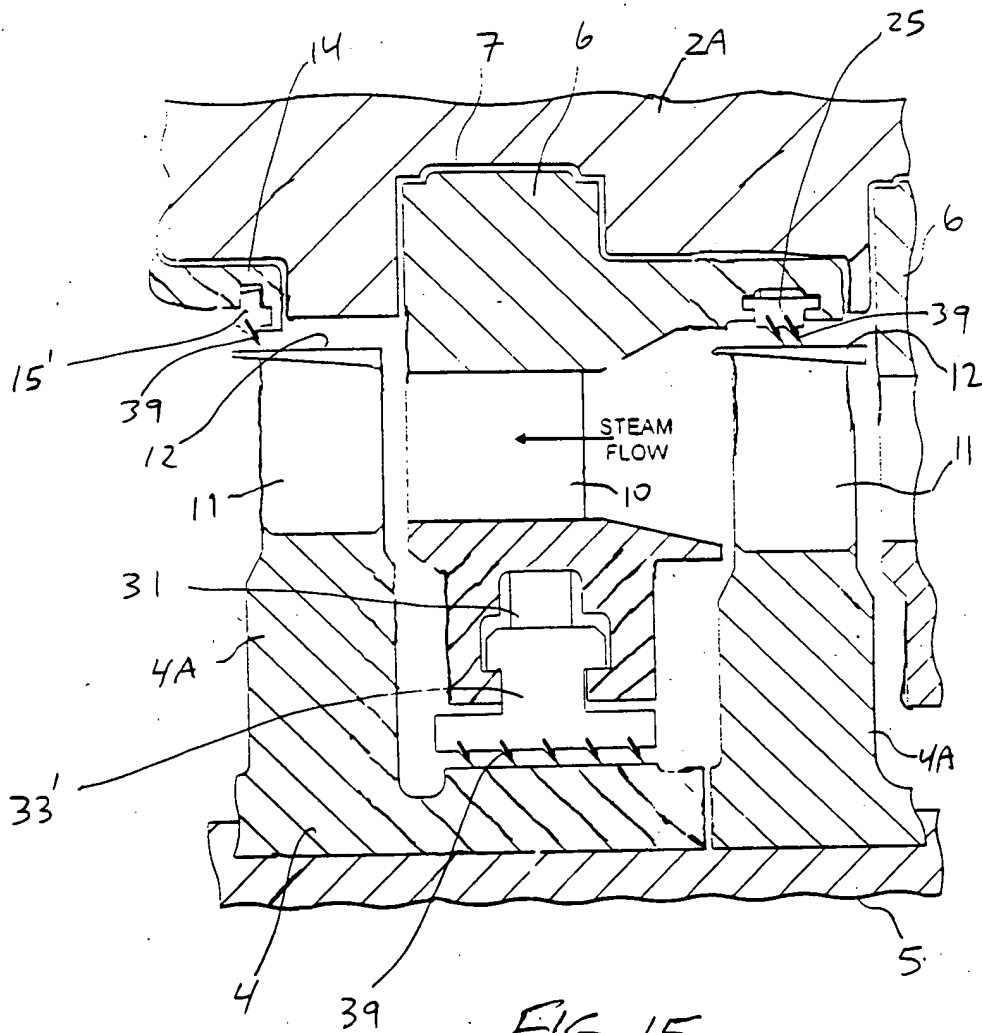


FIG. 15

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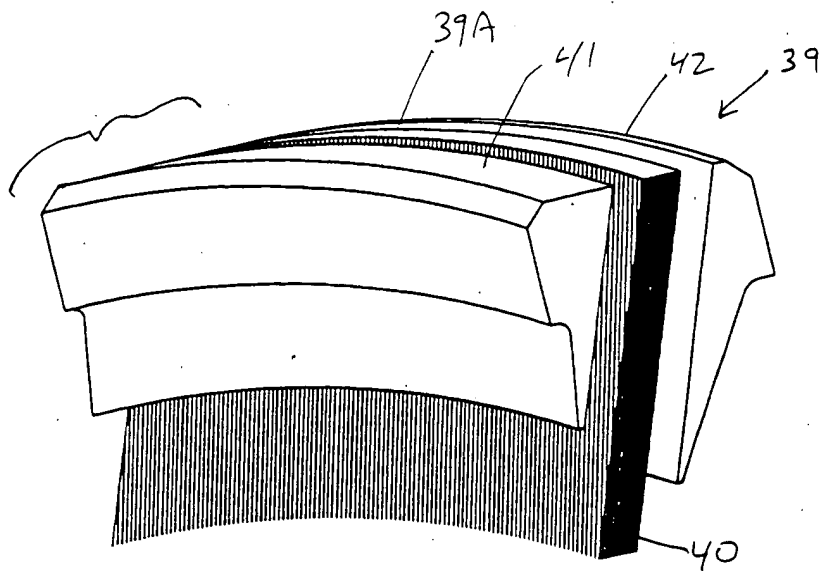


FIG. 16

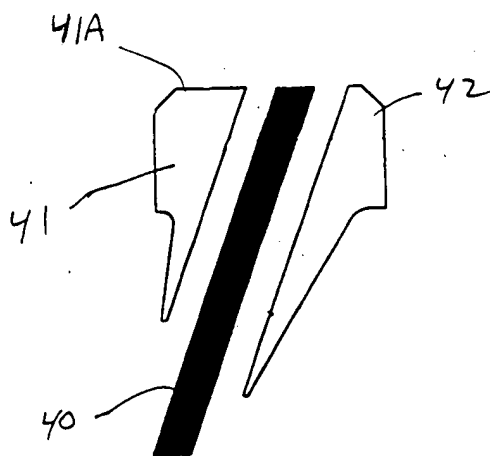


FIG. 16A

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Manufacturing Flowchart

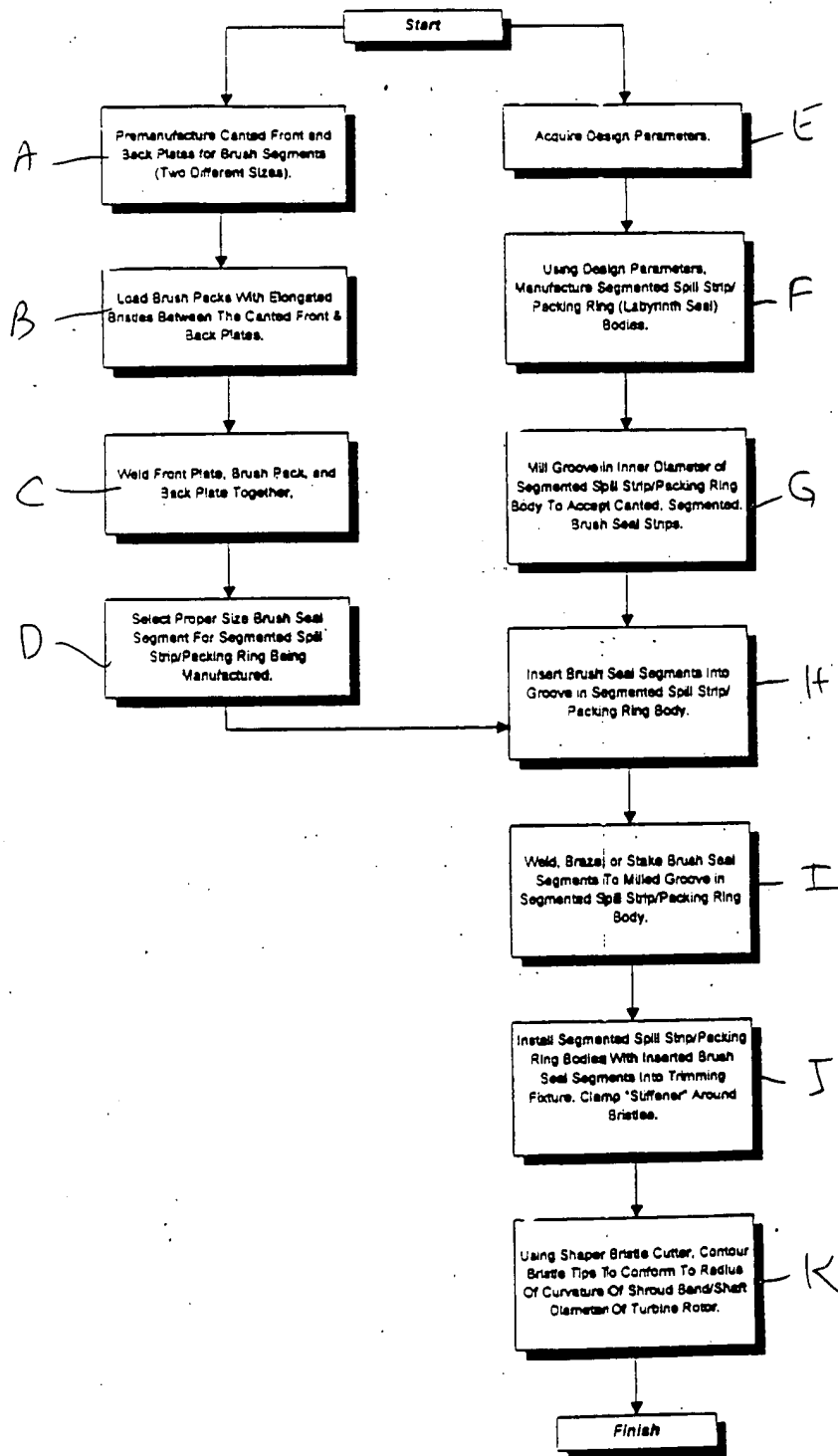


FIG. 17

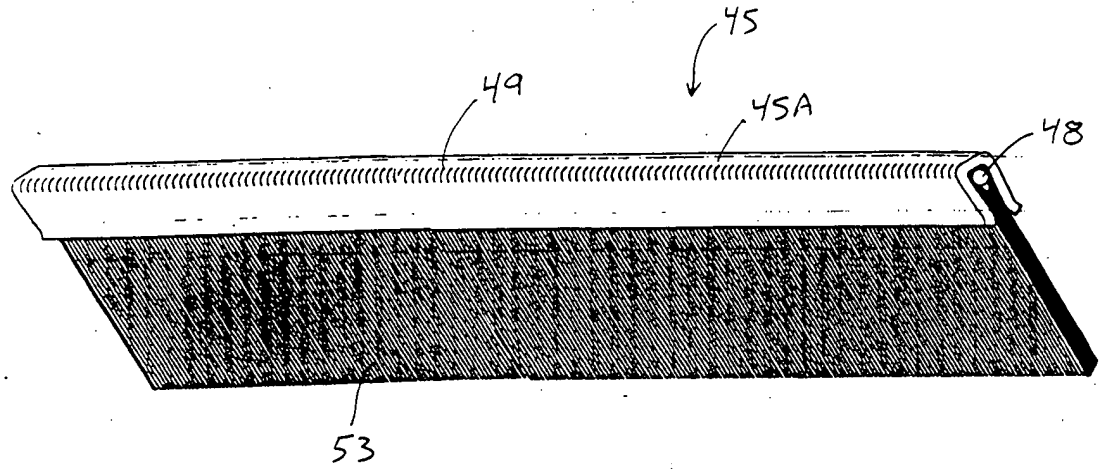


FIG. 18

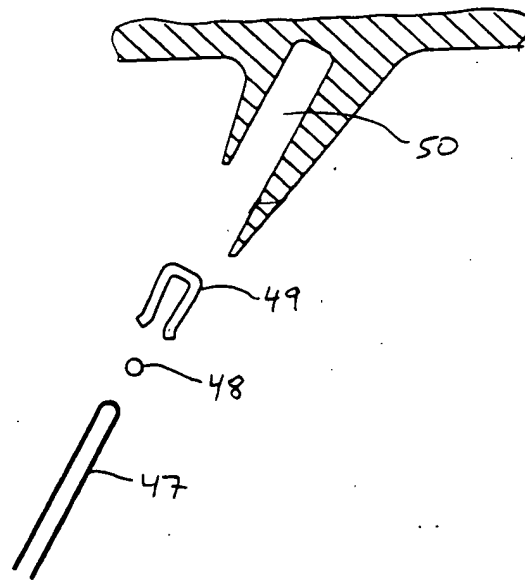


FIG. 18A

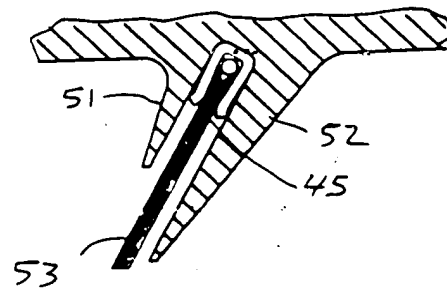


FIG. 18B

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Manufacturing Flowchart

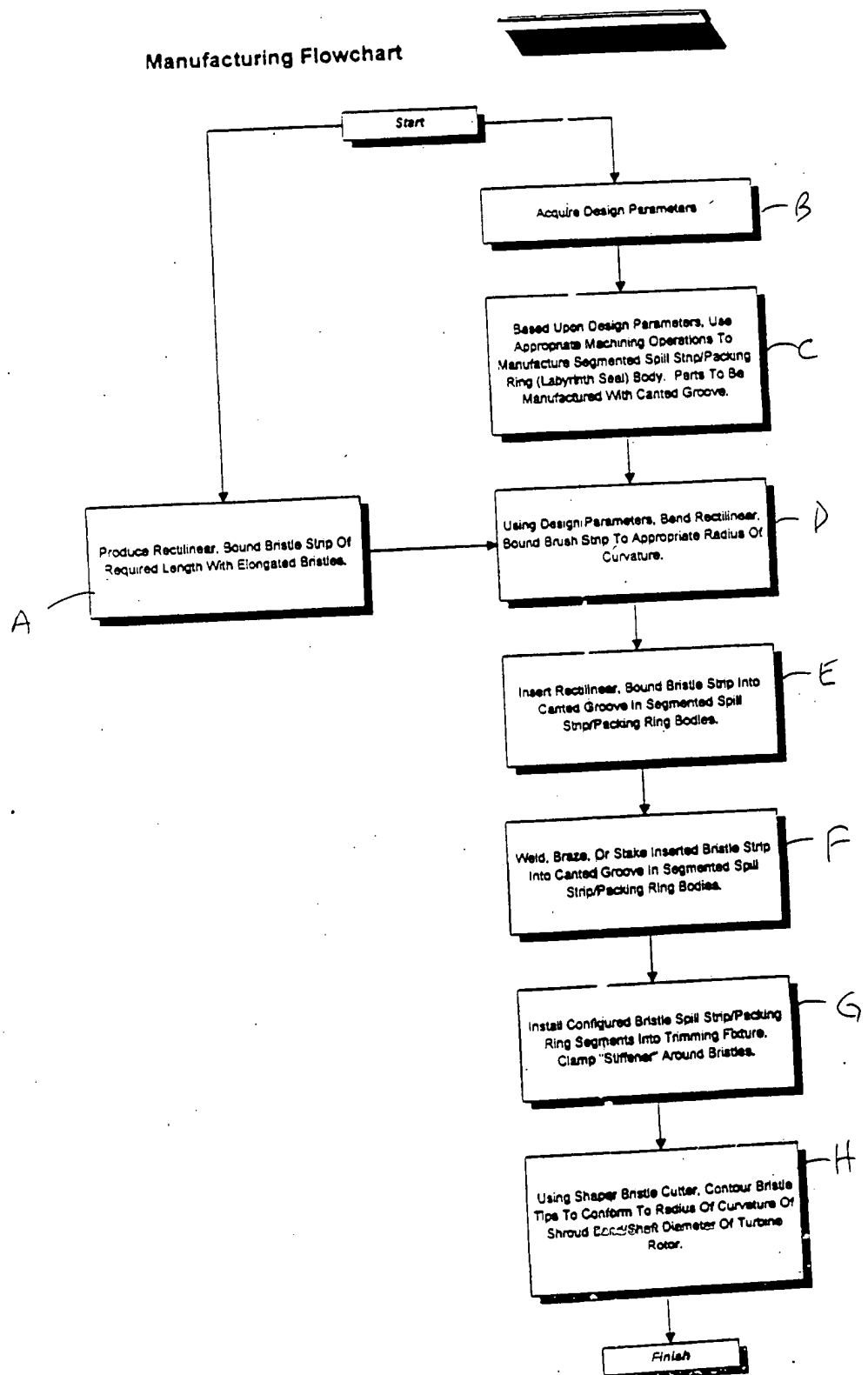


FIG. 19

BRUSH SEALING HORIZONTAL JOINT OF A TURBINE SHELL

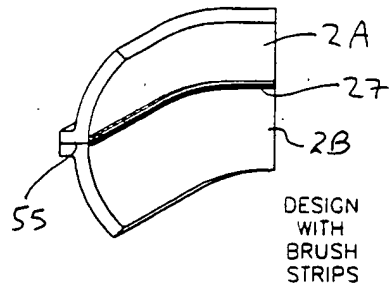


FIG. 20

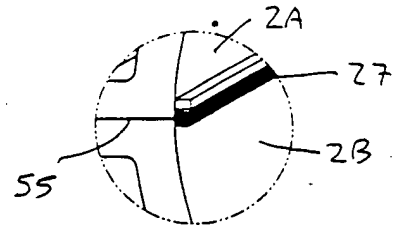


FIG. 20A

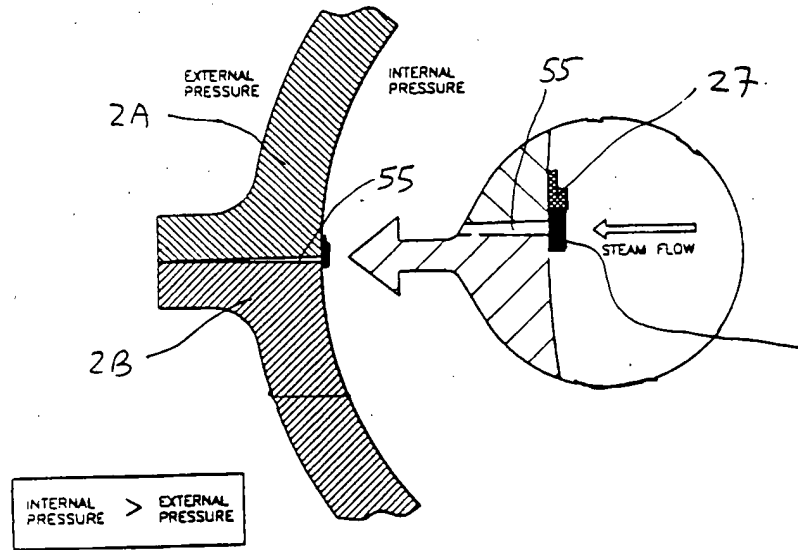


FIG. 20B

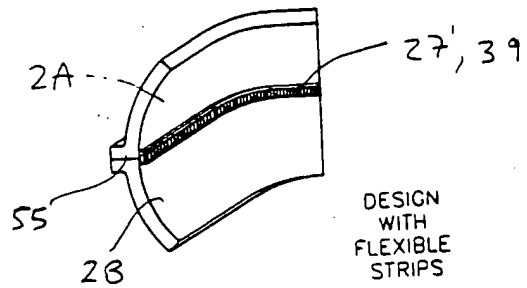


FIG. 21

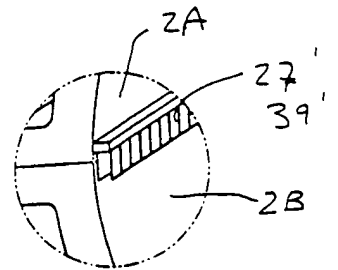


FIG. 21A

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